Residential End-Use Survey

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B.C. Hydro

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CONTENTS

INTRODUCTION 1

HIGHLIGHTS 2

METHOD
Procedure 4
Sample Size Selection 4

B.C. HYDRO DIVISIONAL MAP 5

TABLES 7
Dwelling Types by Division 9
Age of Dwelling 10
House Size - Total Heated Living Area 12
Number of People in Household 13
Principal Residence 14
Residence Ownership 14
Tenants Responsible for Heat and/or Hot Water 15
Information on Energy Conservation Received 16
Insulation Added in Last Twelve Months 17
Heating Fuel Conversions since April 1981 18
Planned Conversion of Heating Fuel 19
Heating Methods 20
Main Heating Fuel 22
All Heating Fuels Used 24
Water Heating Fuels 26
Cooking Fuels 28
Food Refrigeration Equipment 29
Laundry Equipment 30
Miscellaneous Appliances 32

APPENDIX A
Approximate Standard Error of Estimated Saturations 33

APPENDIX B
Number of Residential Accounts 35

APPENDIX C
Sample Sizes and Return Rates in Each District 39

APPENDIX D
Questionnaire 43

INTRODUCTION

The assessment of any proposed or implemented energy marketing program requires the knowledge of customers' preference on energy end-use and how this preference changes over time. To provide a data base for the assessment of programs designed for our residential customers, a series of energy end-use surveys is being conducted at periodic intervals. This is the third survey conducted since 1979.

Information from these surveys will provide input to load forecasting, and examination of the changes in saturation rates over time will give us an indication of our customers' responsiveness to various energy marketing programs.

HIGHLIGHTS

The total response rate was 64.6% which is lower than 76.7% obtained in the 1981 survey. The reduction in the response rate is uniform in all divisions. A possible explanation of this reduction is timing. The first mailing of this survey was coincident with the announcement of rate increases.

An estimated overall 10.8% of our customers used wood as their main heating fuel.

In the 1981 survey the estimated overall planned heating fuel conversion was 10.1% and the estimated overall actual conversion since 1981 is 13.4%. However, the estimated planned conversion from this survey is only 5.4%.

A comparison with saturation rates obtained in previous surveys is given on the following page to serve as an indication only. Comparisons between different sets of saturation rates may not be valid because of different definitions and wording used in the questionnaire.

	Saturation Rates		
	Present Survey	1981 Survey	1979 Survey
		per cent	
Owner Resident	73.7	72.8	70.4
Heating Fuel			
Electricity	24.1	21.9	15.7
Gas	37.5	37.3	28.3
Oil	16.1	22.7	20.7
Water Heating Fuel			
Electricity	47.5	48.5	37.5
Gas	39.1	36.7	33.4
Oil	3.9	5.2	5.9
Cooking Fuel			
Electric	92.6	88.6	85.1
Food Storage Equipment			
Refrigerator	98.3	98.6	98.2
Separate Freezer	63.8	56.3	52.7
Laundry Equipment			
Washer	77.4	74.9	76.1
Electric Dryer	68.3	65.6	62.2
Gas Dryer	2.1	2.3	2.5
Portable Electric Heater	8.5	6.5	18.6
Dishwasher	46.9	41.6	36.2
Central Air Conditioner	2.6	2.7	3.7
Room Air Conditioner	4.0	3.4	3.3
Humidifier	6.7	6.6	5.0

METHOD

PROCEDURE

In May 1984 a Residential End Use survey questionnaire (Appendix D) with a self addressed envelope was sent to a group of selected customers. Approximately four weeks later, a second mailing was made to all non-respondents. The total number of responses from the two mailings is 20 933 which is 64.4%.

SAMPLE SIZE SELECTION

In this survey the method of stratified sampling was used. All residential accounts in the B.C. Hydro's customer billing file were first divided into sampling districts in each division (Appendix B). The sample size required to obtain an error of 2% of the overall estimate at the divisional level with 95% confidence was then determined. This overall sample size was then allocated to each sampling district. The resulting sample sizes for each district are shown in Appendix C.

B.C. HYDRO DIVISIONAL MAP

TABLES

TABLES

The information contained in the returned questionnaires was key-punched and edited for abnormality in the data. The edited data was then stored on magnetic tape for later analysis. The saturation rate of each item was computed and is presented by division.

In each of the following tables the saturation rates in per cent (%) are given. The approximate standard errors for any saturation at a 95% confidence level are shown in Appendix A. A 95% confidence interval for any saturation shown in this report can easily be formed by adding or subtracting the standard error to the estimated saturation rate. For example, the 95% confidence interval of an item within an overall saturation of 17.5% lies between 17.50 - 0.52 and 17.50 + 0.52 or (16.98%, 18.02%), that is, there is a one in twenty chance that the true, unknown saturation rate is not within the interval from 16.98% to 18.02% both inclusive.

DWELLING TYPES BY DIVISION

DWELLING TYPES	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Single Family Dwelling	66.36	71.21	73.01	72.11	69.28	68.32
Duplex	2.70	6.62	2.68	3.57	3.63	3.10
Row House	5.84	4.56	2.67	3.95	3.65	4.86
Apartment Suite	22.99	7.18	7.23	6.72	17.56	18.25
Mobile Home	2.02	10.29	14.17	13.55	5.69	5.34
Other	0.09	0.13	0.24	0.10	0.19	0.12

AGE OF DWELLING

All Dwelling Types

YEAR BUILT	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Before 1960	32.98	26.46	15.11	20.51	32.30	29.76
1960 - 1969	16.56	17.31	19.34	15.62	14.43	16.25
1970 - 1975	16.66	20.45	24.80	26.19	19.14	19.05
After 1975	22.76	26.51	30.92	29.30	23.74	24.49
Don't Know	11.04	9.27	9.83	8.38	10.40	10.45

AGE OF DWELLING....cont'd

Single Family Dwellings, Duplexes and Row Houses

YEAR BUILT	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Before 1960	39.95	30.61	18.53	24.79	42.65	36.78
1960 - 1969	15.53	18.13	21.14	16.18	13.84	15.78
1970 - 1975	15.08	17.33	22.40	24.39	15.61	16.91
After 1975	23.99	26.34	30.26	28.27	22.32	24.70
Don't Know	5.46	7.61	7.67	6.37	5.58	5.83

HOUSE SIZE - TOTAL HEATED LIVING AREA

Mean Total Heated Living Area by Dwelling Types in Square Feet

DWELLING TYPES	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
Single Family Dwelling	1930	1750	1840	1910	1770	1880
Duplex	1560	1430	1480	1640	1500	1550
Row House	1280	1230	1280	1220	1180	1250
Apartment Suite	790	800	770	810	850	800
Mobile Home	900	930	940	930	1010	930
Other	1260	580	650	860	590	1000

NUMBER OF PEOPLE IN HOUSEHOLD

NUMBER OF PEOPLE	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
1	18.30	11.47	10.98	13.07	18.79	17.02
2	33.14	24.45	28.98	35.97	39.17	34.16
3	16.58	19.02	18.36	18.74	16.44	17.00
4	19.14	27.99	26.08	20.34	17.20	19.68
5	8.07	10.94	10.41	8.52	6.13	7.98
6 or More	4.79	6.13	5.20	3.36	2.28	4.16

PRINCIPAL RESIDENCE

	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Principal Residence	98.82	97.87	97.31	98.16	98.57	98.54

RESIDENCE OWNERSHIP

	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Owner-Resident	70.75	78.42	79.29	81.90	74.28	73.68

TENANTS RESPONSIBLE FOR HEAT AND/OR HOT WATER

All Rented Dwellings

UTILITIES	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Heat & Hot Water	43.87	78.02	77.44	70.46	59.64	53.97
Heat	12.02	8.39	7.04	11.83	9.63	10.97
Hot Water	1.60	1.56	1.59	1.86	2.52	1.82

INFORMATION ON ENERGY CONSERVATION
RECEIVED FROM B.C. HYDRO IN THE PAST 12 MONTHS

Single Family Dwellings, Duplexes and Row Houses

(Expressed as a percentage of total responses)

	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Received Information	34.55	41.15	38.17	38.66	35.38	35.67
Acted on Information						
- Yes	12.98	16.51	14.27	14.99	13.74	13.57

INSULATION ADDED IN LAST TWELVE MONTHS

Single Family Dwellings, Duplexes and Row Houses

INSULATION ADDED		DIVISION Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
		per cent					
Attic	(A)	9.48	8.84	9.76	10.14	7.54	9.14
Exterior Walls	(Wall)	0.58	0.82	0.50	0.69	0.80	0.64
Basement	(Bsmt)	1.33	2.56	3.19	2.39	1.59	1.69
Glazed Windows	(Window)	4.21	1.46	0.97	1.23	6.08	3.93
Weather Stripping /Caulking	(Caulk)	2.96	3.17	3.85	3.44	2.41	2.98
A & Caulk		2.62	3.50	3.58	4.18	2.90	2.96
A & Window		3.92	1.50	1.52	1.55	5.77	3.78
A, Window & Caulk		2.09	1.91	1.23	1.77	2.06	1.97
A & Bsmt		1.15	1.95	1.27	1.48	1.56	1.31
A, Bsmt & Caulk		0.80	1.07	1.59	0.99	0.92	0.92
A, Bsmt & Window		0.57	0.35	0.29	0.32	0.93	0.59
A, Bsmt, Window & Caulk		0.58	0.41	0.56	0.93	1.14	0.73
A & Wall		0.83	1.08	0.70	1.23	1.07	0.92
A, Wall & Caulk		0.23	0.62	1.06	0.42	0.62	0.42
A, Wall & Window		0.58	0.56	0.41	0.95	0.97	0.69
A, Wall, Window & Caulk		0.90	1.49	1.01	1.00	0.87	0.93
A, Wall & Bsmt		0.38	0.44	0.25	0.27	0.91	0.48
A, Wall, Bsmt & Caulk		0.32	0.51	0.30	0.15	0.51	0.35
A, Wall, Bsmt & Window		0.40	0.73	0.37	0.49	0.56	0.45
A, Wall, Bsmt, Window & Caulk		1.07	1.60	1.90	1.21	2.23	1.42
Wall & Caulk		0.27	0.38	0.29	0.58	0.19	0.29
Wall & Window		0.28	0.38	0.29	0.16	0.48	0.31
Wall, Window & Caulk		0.28	0.76	0.19	0.28	0.19	0.27
Wall & Bsmt		0.25	0.28	0.13	0.32	0.12	0.22
Wall, Bsmt & Caulk		0.07	0.33	0.15	0.26	0.06	0.10
Wall, Bsmt & Window		0.07	0.11	0.05	0.12	0.06	0.07
Wall, Bsmt, Window & Caulk		0.09	0.04	0.21	0.14	0.21	0.13
Bsmt & Caulk		0.75	1.95	2.03	1.75	0.68	0.99
Bsmt & Window		0.26	0.26	0.26	0.31	0.58	0.34
Bsmt, Window & Caulk		0.30	0.44	0.25	0.40	0.45	0.35
Window & Caulk		1.24	1.42	1.11	1.16	1.85	1.36

HEATING FUEL CONVERSIONS SINCE APRIL 1981

Single Family Dwellings, Duplexes and Row Houses

(Expressed as a percentage of total responses)

HEATING FUELS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Conversions	11.49	20.81	13.53	16.40	16.08	13.45
Previous Fuel:						
-Electricity	0.66	4.08	2.14	2.76	3.03	1.62
-Gas	1.78	1.28	2.19	2.48	0.40	1.59
-Oil	8.63	14.41	7.85	9.95	11.92	9.58
-Other	0.42	1.04	1.35	1.20	0.73	0.67

PLANNED CONVERSION OF HEATING FUEL

Single Family Dwellings, Duplexes and Row Houses

(Expressed as a percentage of total responses)

HEATING FUELS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Planned Conversions	3.51	10.10	7.33	6.61	8.22	5.37
Planned Fuel:						
-Electricity	0.34	1.47	0.63	0.68	2.24	0.84
-Gas	2.09	3.97	2.88	2.75	2.01	2.26
-Oil	0.09	0.31	0.08	0.08	0.31	0.14
-Other	0.99	4.36	3.74	3.11	3.66	2.12

HEATING METHODS

All Dwelling Types

HEATING METHODS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
F	45.76	30.85	43.85	41.03	26.57	40.55
HW	15.96	5.97	4.83	4.60	9.33	12.06
Wired El	10.20	18.05	6.75	9.74	21.78	12.56
Ptbl El	0.71	1.19	0.54	0.79	1.49	0.88
Stove	1.32	8.64	8.22	6.85	4.89	3.48
F & Stove	5.57	11.38	14.11	16.01	9.87	8.54
F & Ptbl El	5.35	2.25	2.95	2.74	3.24	4.32
F & Wired El	3.10	2.18	2.00	2.22	1.94	2.64
F, Ptbl El & Stove	0.68	0.75	1.25	1.33	1.11	0.89
F, Wired El & Stove	0.56	1.23	1.33	0.94	0.98	0.77
F, Wired El & Ptbl El	0.45	0.24	0.17	0.24	0.32	0.37
F, Wired El, Ptbl El & Stove	0.08	0.08	0.12	0.16	0.06	0.09
HW & Stove	0.45	1.34	1.04	1.78	1.09	0.81
HW & Ptbl El	0.60	0.38	0.09	0.23	0.42	0.47
HW & Wired El	0.51	0.81	0.57	0.25	0.77	0.55
HW, Ptbl El & Stove	0.04	0.26	0.17	0.24	0.12	0.09
HW, Wired El & Stove	0.02	0.19	0.07	0.06	0.23	0.08
HW, Wired El & Ptbl El	0.15	0.20	0.10	0.11	0.15	0.14
HW, Wired El, Ptbl El & Stove	0.01	0.05	0.04	0.02	0.10	0.03
Wired El & Stove	1.17	8.50	6.27	5.83	8.40	3.87
Wired El & Ptbl El	0.46	0.53	0.14	0.28	0.53	0.43
Wired El, Ptbl El & Stove	0.11	0.49	0.43	0.26	0.39	0.23
Ptbl El & Stove	0.21	1.79	1.29	1.06	0.73	0.55
Other	2.13	1.95	2.61	2.01	2.93	2.32
Don't Know	4.43	0.70	1.09	1.23	2.58	3.29

LEGEND:
- F - Central Air Furnace
- HW - Hot Water Heating System
- Wired El - Wired-in Electric Heater
- Ptbl El - Portable Electric Heater
- Stove - Wood Stove

HEATING METHODS....cont'd

Single Family Dwellings, Duplexes and Row Houses

HEATING METHODS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
F	54.10	31.06	47.02	41.97	30.51	46.46
HW	7.79	4.95	3.34	3.67	4.55	6.19
Wired El	10.29	16.69	4.08	7.96	18.21	11.38
Ptbl El	0.79	1.14	0.50	0.72	1.55	0.93
Stove	1.51	9.34	8.73	6.64	5.61	3.78
F & Stove	6.49	11.49	13.43	16.77	11.27	9.38
F & Ptbl El	6.57	2.05	2.99	2.52	3.99	5.14
F & Wired El	3.85	2.26	2.21	2.46	2.38	3.20
F, Ptbl El & Stove	0.80	0.62	1.33	1.36	1.34	1.02
F, Wired El & Stove	0.67	1.28	1.27	0.97	1.20	0.88
F, Wired El & Ptbl El	0.56	0.29	0.21	0.30	0.40	0.46
F, Wired El, Ptbl El & Stove	0.10	0.10	0.12	0.19	0.07	0.11
HW & Stove	0.51	1.42	1.06	2.02	1.28	0.92
HW & Ptbl El	0.51	0.38	0.12	0.23	0.43	0.43
HW & Wired El	0.32	0.63	0.27	0.15	0.80	0.41
HW, Ptbl El & Stove	0.04	0.24	0.12	0.22	0.15	0.10
HW, Wired El & Stove	0.03	0.23	0.05	0.08	0.27	0.09
HW, Wired El & Ptbl El	0.15	0.20	0.08	0.14	0.25	0.16
HW, Wired El, Ptbl El & Stove	0.01	0.07	0.05	0.02	0.11	0.04
Wired El & Stove	1.34	10.19	7.76	7.21	9.94	4.62
Wired El & Ptbl El	0.37	0.52	0.14	0.19	0.59	0.38
Wired El, Ptbl El & Stove	0.13	0.59	0.49	0.30	0.48	0.27
Ptbl El & Stove	0.21	1.86	1.46	1.23	0.80	0.60
Other	2.06	2.02	2.60	2.17	3.19	2.36
Don't Know	0.82	0.39	0.58	0.55	0.64	0.72

LEGEND:
- F - Central Air Furnace
- HW - Hot Water Heating System
- Wired El - Wired-in Electric Heater
- Ptbl El - Portable Electric Heater
- Stove - Wood Stove

MAIN HEATING FUEL

All Dwelling Types

HEATING FUELS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Electricity	18.04	25.68	12.61	16.07	34.59	21.11
Gas	63.21	28.71	51.20	49.38	1.75	46.56
Oil	8.04	20.64	11.11	12.56	42.34	16.49
Wood	3.37	23.93	23.75	20.83	18.35	10.80
Other	1.62	0.29	0.64	0.62	1.20	1.30
Don't Know	5.73	0.75	0.68	0.55	1.77	3.75

MAIN HEATING FUEL....cont'd

Single Family Dwellings, Duplexes and Row Houses

HEATING FUELS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Electricity	14.60	24.07	9.35	14.08	29.81	17.62
Gas	72.84	32.35	57.80	53.95	2.04	53.21
Oil	8.33	17.43	7.16	9.92	46.44	16.81
Wood	3.78	25.87	25.40	21.77	21.37	11.97
Other	0.20	0.17	0.10	0.21	0.28	0.21
Don't Know	0.26	0.11	0.19	0.06	0.06	0.18

ALL HEATING FUELS USED

All Dwelling Types

HEATING FUELS	DIVISION Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Electricity	14.23	17.41	7.98	9.76	22.13	14.99
Electricity & Wood	3.75	17.01	12.02	12.89	19.16	9.13
Gas	36.12	16.41	30.60	28.30	0.88	26.70
Gas & Wood	13.04	8.58	14.81	16.64	0.60	10.81
Oil	4.34	10.79	5.00	5.97	22.78	8.70
Oil & Wood	2.58	10.55	10.73	9.84	17.14	7.40
Wood	0.62	5.10	4.29	2.89	1.75	1.54
Electricity & Gas	10.04	3.92	5.60	5.34	0.35	6.90
Electricity, Gas & Wood	5.71	2.41	3.94	3.52	0.32	4.07
Electricity & Oil	1.22	3.43	1.17	1.30	5.74	2.25
Electricity, Oil & Wood	0.83	3.06	2.19	2.26	5.85	2.24
Electricity, Gas & Oil	0.06	0.21	0.02	0.04	0.04	0.05
Electricity, Gas, Oil & Wood	0.00	0.00	0.12	0.03	0.02	0.02
Gas & Oil	0.11	0.07	0.13	0.08	0.20	0.13
Gas, Oil & Wood	0.00	0.00	0.10	0.00	0.08	0.03
Other	1.62	0.29	0.64	0.62	1.20	1.30
Don't Know	5.73	0.75	0.68	0.55	1.77	3.75

ALL HEATING FUELS USED....cont'd

Single Family Dwellings, Duplexes and Row Houses

HEATING FUELS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Electricity	9.33	14.55	3.89	6.55	15.66	10.06
Electricity & Wood	5.49	20.11	14.78	15.88	22.35	11.44
Gas	39.53	18.08	34.14	30.05	0.96	29.18
Gas & Wood	15.87	10.23	17.18	19.25	0.65	12.95
Oil	4.11	8.68	2.56	3.57	21.80	7.83
Oil & Wood	2.97	9.25	8.60	8.82	20.81	8.08
Wood	0.69	5.86	5.00	3.07	2.10	1.76
Electricity & Gas	12.09	4.13	6.11	5.35	0.27	8.09
Electricity, Gas & Wood	7.08	2.84	4.54	4.12	0.42	4.99
Electricity & Oil	1.23	3.03	0.68	0.83	6.65	2.35
Electricity, Oil & Wood	1.02	2.89	2.05	2.13	7.61	2.69
Electricity, Gas & Oil	0.05	0.07	0.00	0.03	0.07	0.05
Electricity, Gas, Oil & Wood	0.00	0.00	0.07	0.04	0.00	0.01
Gas & Oil	0.10	0.00	0.00	0.06	0.27	0.12
Gas, Oil & Wood	0.00	0.00	0.10	0.00	0.06	0.02
Other	0.20	0.17	0.10	0.21	0.28	0.21
Don't Know	0.26	0.11	0.19	0.06	0.06	0.18

WATER HEATING FUELS

All Dwelling Types

WATER HEATING FUELS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Electricity	33.19	69.85	51.61	49.32	79.93	47.54
Gas	53.30	22.39	40.80	42.62	1.46	39.12
Oil	1.60	2.83	1.86	2.55	11.44	3.87
Electricity & Gas	1.47	0.53	0.89	0.84	0.00	1.01
Electricity & Oil	0.17	0.66	0.33	0.29	0.90	0.37
Other	1.14	2.49	2.94	2.48	1.85	1.63
Don't Know	9.13	1.25	1.57	1.91	4.43	6.47

WATER HEATING FUELS....cont'd

Single Family Dwellings, Duplexes and Row Houses

WATER HEATING FUELS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Electricity	34.97	67.44	43.85	42.77	85.47	48.28
Gas	60.28	25.46	49.63	50.49	1.59	44.78
Oil	1.55	3.10	1.75	2.92	10.03	3.58
Electricity & Gas	1.61	0.60	1.04	0.75	0.00	1.09
Electricity & Oil	0.15	0.61	0.24	0.21	1.02	0.36
Other	0.79	2.60	3.08	2.53	1.79	1.44
Don't Know	0.66	0.17	0.42	0.34	0.10	0.47

COOKING FUELS

COOKING FUELS	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Electricity	90.51	92.83	88.26	92.37	95.77	91.72
Gas	7.25	1.65	5.45	3.86	0.95	5.22
Electricity & Gas	1.36	0.29	0.55	0.53	0.08	0.90
Other	0.88	5.23	5.74	3.24	3.20	2.17

FOOD REFRIGERATION EQUIPMENT

APPLIANCES	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Refrigerator						
Frost Free or Auto Defrost	20.83	11.79	11.96	10.79	15.86	17.65
Manual Defrost	15.57	9.94	10.08	8.65	14.64	13.98
More Than One Refrigerator	4.11	1.37	1.46	1.19	2.05	3.05
Separate Freezer and						
Frost Free or Auto Defrost Refrigerator	34.14	46.21	45.88	45.98	39.17	37.85
Manual Defrost Refrigerator	9.67	18.49	17.40	16.01	14.65	12.33
More than one Refrigerator	13.86	9.73	11.90	15.95	12.02	13.43
Separate Freezer Only	0.23	0.58	0.33	0.19	0.17	0.23

LAUNDRY EQUIPMENT

All Dwelling Types

APPLIANCES	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Washer	8.23	9.30	7.14	9.44	8.68	8.40
Washer with						
a) Electric Dryer	63.71	73.59	74.32	74.08	68.50	67.05
b) Gas Dryer	2.32	1.29	2.40	2.23	0.46	1.89
c) Electric Dryer & Gas Dryer	0.09	0.05	0.04	0.20	0.14	0.10
Electric Dryer	1.02	1.39	1.58	1.01	1.24	1.12
Gas Dryer	0.06	0.13	0.09	0.21	0.00	0.07
Electric Dryer & Gas Dryer	0.06	0.03	0.16	0.06	0.03	0.06
TOTALS						
Washer	74.35	84.23	83.90	85.95	77.78	77.44
Electric Dryer	64.88	75.06	76.10	75.35	69.91	68.33
Gas Dryer	2.53	1.50	2.69	2.70	0.63	2.12

LAUNDRY EQUIPMENT....cont'd

Single Family Dwellings, Duplexes and Row Houses

APPLIANCES	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Washer	10.09	10.38	7.71	10.37	10.62	10.04
Washer with						
a) Electric Dryer	77.78	78.47	79.87	78.02	79.40	78.35
b) Gas Dryer	2.89	1.49	2.83	2.64	0.48	2.30
c) Electric Dryer & Gas Dryer	0.09	0.06	0.05	0.25	0.09	0.11
Electric Dryer	1.13	1.28	1.54	1.08	1.40	1.22
Gas Dryer	0.09	0.12	0.12	0.26	0.00	0.09
Electric Dryer & Gas Dryer	0.05	0.04	0.12	0.04	0.04	0.05
TOTALS						
Washer	90.85	90.40	90.46	91.28	90.59	90.80
Electric Dryer	79.05	79.85	81.58	79.39	80.93	79.73
Gas Dryer	3.12	1.71	3.12	3.19	0.61	2.55

MISCELLANEOUS APPLIANCES

APPLIANCES	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
	per cent					
Dishwasher	49.76	38.50	41.90	46.33	42.50	46.86
Microwave Oven	23.80	24.91	28.20	27.90	21.48	24.16
Room Air-Conditioner	2.63	3.04	3.85	14.04	2.32	3.96
Central Air-Conditioner	1.74	1.13	1.52	9.88	1.53	2.58
Humidifier	4.61	7.51	17.12	15.78	3.27	6.70
Sauna - Electric	1.40	1.81	1.66	2.11	1.59	1.56
Electric Hot Tub or Jacuzzi	2.14	1.61	1.29	2.18	1.88	2.01
Swimming Pool Heater - Electric	0.24	0.13	0.10	0.20	0.18	0.21
Swimming Pool Heater - Gas	2.35	0.20	0.50	2.19	0.17	1.65
Electric Car Block Heater	1.96	28.74	71.78	47.33	1.73	13.55
Electric Car Interior Heater	0.68	4.06	11.90	5.06	0.79	2.22
Electric Heating Cables (snow)	0.37	3.51	4.73	3.53	0.36	1.17

APPENDICES

APPENDIX A

APPROXIMATE STANDARD ERROR OF ESTIMATED SATURATIONS

(At 95% Confidence Level)

PER CENT SATURATION	DIVISION					
	Lower Mainland	North Coast	Central Interior	South Interior	Vanc'r Island	Over All
0 - 5 95.01 - 100	0.37	0.54	0.53	0.50	0.50	0.21
5.01 - 10 90.01 - 95	0.62	0.91	0.89	0.84	0.85	0.36
10.01 - 15 85.01 - 90	0.77	1.14	1.12	1.06	1.07	0.45
15.01 - 20 80.01 - 85	0.90	1.31	1.29	1.22	1.23	0.52
20.01 - 25 75.01 - 80	0.98	1.44	1.41	1.34	1.35	0.57
25.01 - 30 70.01 - 75	1.05	1.54	1.51	1.43	1.44	0.61
30.01 - 35 65.01 - 70	1.10	1.61	1.59	1.50	1.51	0.63
35.01 - 40 60.01 - 65	1.14	1.67	1.64	1.55	1.56	0.66
40.01 - 45 55.01 - 60	1.17	1.70	1.67	1.58	1.60	0.67
45.01 - 50 50.01 - 55	1.18	1.72	1.69	1.60	1.61	0.70

APPENDIX B

NUMBER OF RESIDENTIAL ACCOUNTS

(As of 31 March 1984)

	Number of Accounts	% of Division	% of Total
B.C. HYDRO SERVICE AREA	955 953		100.00
LOWER MAINLAND DIVISION	538 192	100.00	56.30
Metro West Area			
Vancouver 1 & UEL	45 516	8.46	
Vancouver 2	18 249	3.39	
Vancouver 3	20 395	3.79	
Vancouver 4	27 176	5.05	
Vancouver 5	23 805	4.42	
Vancouver 6	27 870	5.18	
Burnaby	53 223	9.89	
Richmond	34 466	6.40	
North Shore	52 098	9.68	
Metro East Area			
Coquitlam-Haney	52 149	9.69	
Metro Coastal Area			
Squamish-Sechelt-Powell River Districts	22 845	4.25	
Fraser Valley West and East Areas			
Surrey/Delta	81 516	15.15	
Langley	23 489	4.36	
Abbotsford/Chilliwack -Hope Districts	55 395	10.29	

APPENDIX B - Number of Residential Accounts....cont'd

	Number of Accounts	% of Division	% of Total
NORTH COAST DIVISION	26 364	100.00	2.76
Smithers District	6 266	23.77	
Terrace District	10 372	39.34	
Prince Rupert District	6 180	23.44	
Stewart-Queen Charlottes -Bella Coola Districts	3 546	13.45	
CENTRAL INTERIOR DIVISION	79 370	100.00	8.30
Ft. Nelson-Ft. St. John -Dawson Creek -Chetwynd Districts	19 949	25.13	
Burns Lake -Vanderhoof Districts	7 849	9.89	
Mackenzie-Prince George -McBride-Valemount Districts	29 762	37.50	
Quesnel-Williams Lake -100 Mile House Districts	21 810	27.48	

APPENDIX B - Number of Residential Accounts....cont'd

	Number of Accounts	% of Division	% of Total
SOUTH INTERIOR DIVISION	107 689	100.00	11.26
Lilloet-Cache Creek -Merritt Districts	8 478	7.87	
Kamloops-Clearwater Districts	28 265	26.25	
Salmon Arm-Vernon -Westbank Districts	41 336	38.39	
Revelstoke-Nakusp-Golden -Invermere Districts	11 753	10.91	
Cranbrook Area -Fernie District	17 857	16.58	
VANCOUVER ISLAND DIVISION	204 338	100.00	21.38
Pt. Hardy-Campbell River -Courtenay Districts	30 752	15.05	
Alberni District	11 090	5.43	
Qualicum/Parksville -Nanaimo-Duncan -Gulf Islands Districts	59 485	29.11	
Victoria District			
Langford-Sooke/Malahat	13 054	6.39	
Saanich/Sidney/Vic. Un.	43 237	21.16	
Victoria/Oak Bay/Esquimalt	46 720	22.86	

APPENDIX C

SAMPLE SIZES AND RETURN RATES IN EACH DISTRICT

	Sample Size	1st Return Number	1st Return %	2nd Return Number	2nd Return %	Total Number	Total %
B.C. HYDRO SERVICE AREA	32 400	13 472	41.6	7 461	23.0	20 933	64.6
LOWER MAINLAND DIVISION	10 800	4 469	41.4	2 440	22.6	6 909	64.0
Metro West Area							
Vancouver 1 & UEL	700	287	41.0	146	20.9	433	61.9
Vancouver 2	320	146	45.6	73	22.8	219	68.4
Vancouver 3	590	252	42.7	154	26.1	406	68.8
Vancouver 4	520	176	33.8	134	25.8	310	59.6
Vancouver 5	620	195	31.5	127	20.5	322	51.9
Vancouver 6	790	243	30.8	160	20.3	403	51.0
Burnaby	890	372	41.8	190	21.3	562	63.1
Richmond	990	444	44.8	238	24.0	682	68.9
North Shore	760	328	43.2	177	23.3	505	66.4
Metro East Area							
Coquitlam-Haney	910	384	42.2	193	21.2	577	63.4
Metro Coastal Area							
Squamish-Sechelt-Powell River Districts	1 340	634	47.3	291	21.7	925	69.0
Fraser Valley West and East Areas							
Surrey/Delta	1 230	515	41.9	309	25.1	824	67.0
Langley	340	123	36.2	87	25.6	210	61.8
Abbotsford/Chilliwack -Hope Districts	800	370	46.3	161	20.1	531	66.4

APPENDIX C - Sample Sizes and Return Rates....cont'd

	Sample Size	1st Return Number	1st Return %	2nd Return Number	2nd Return %	Total Number	Total %
NORTH COAST DIVISION	5 400	1 970	36.5	1 274	23.6	3 244	60.1
Smithers District	1 400	604	43.1	341	24.4	945	67.5
Terrace District	2 070	726	35.1	480	23.2	1 206	58.3
Prince Rupert District	1 420	452	31.8	350	24.6	802	56.5
Stewart-Queen Charlottes -Bella Coola Districts	510	188	36.9	103	20.2	291	57.1
CENTRAL INTERIOR DIVISION	5 400	2 073	38.4	1 274	23.6	3 347	62.0
Ft. Nelson-Ft. St. John -Dawson Creek -Chetwynd Districts	1 060	393	37.1	235	22.2	628	59.2
Burns Lake -Vanderhoof Districts	1 000	409	40.9	227	22.7	636	63.6
Mackenzie-Prince George -McBride-Valemount Districts	1 640	617	37.6	390	23.8	1 007	61.4
Quesnel-Williams Lake -100 Mile House Districts	1 700	654	38.5	422	24.8	1 076	63.3

APPENDIX C - Sample Sizes and Return Rates....cont'd

	Sample Size	1st Return Number	1st Return %	2nd Return Number	2nd Return %	Total Number	Total %
SOUTH INTERIOR DIVISION	5 400	2 463	45.6	1 282	23.7	3 745	69.4
Lillooet-Cache Creek -Merritt Districts	580	236	40.7	131	22.6	367	63.3
Kamloops-Clearwater Districts	1 150	511	44.4	268	23.3	779	67.7
Salmon Arm-Vernon -Westbank Districts	1 730	865	50.0	412	23.8	1 277	73.8
Revelstoke-Nakusp-Golden -Invermere Districts	1 090	484	44.4	256	23.5	740	67.9
Cranbrook Area -Fernie District	850	367	43.2	215	25.3	582	68.5
VANCOUVER ISLAND DIVISION	5 400	2 497	46.2	1 191	22.1	3 688	68.3
Pt. Hardy-Campbell River -Courtenay Districts	960	395	41.1	243	25.3	638	66.5
Alberni District	490	220	44.9	117	23.9	337	68.8
Qualicum/Parksville -Nanaimo-Duncan -Gulf Island Districts	1 290	595	46.1	275	21.3	870	67.4
Victoria District:							
Langford-Sooke/Malahat	590	306	51.9	119	20.2	425	72.0
Saanich/Sidney/Vic. Un.	1 130	583	51.6	246	21.8	829	73.4
Victoria/Oak Bay/ Esquimalt	940	398	42.3	191	20.3	589	62.7

Please Ignore Red Numbers
Please Check ☑

Residential End-Use Survey Questionnaire

B.C. Hydro

1. APPLIANCES (Please check the appliances you use in your dwelling)

Please indicate whether the appliances you use are located in your own dwelling or in a central area for common use.

	Own Dwelling	Central Area
DISHWASHER	☐ 12	
MICROWAVE OVEN	☐ 13	
ROOM AIR CONDITIONER	☐ 14	
HUMIDIFIER	☐ 15	
CENTRAL AIR CONDITIONING SYSTEM	☐ 16	☐
CLOTHES WASHER	☐ 17	☐
ELECTRIC CLOTHES DRYER	☐ 18	☐
GAS CLOTHES DRYER	☐ 19	☐
ELECTRIC SAUNA	☐ 20	☐
ELECTRIC HOT TUB OR JACUZZI	☐ 21	☐
SWIMMING POOL HEATER - ELECTRIC	☐ 22	☐
SWIMMING POOL HEATER - GAS	☐ 23	☐
ELECTRIC CAR BLOCK HEATER	☐ 24	☐
ELECTRIC CAR INTERIOR HEATER	☐ 25	☐
ELECTRIC HEATING CABLES (for snow)	☐ 26	☐

Please indicate the number of the following appliances you use in your dwelling.

REFRIGERATOR, MANUAL DEFROST _____ 27

REFRIGERATOR, AUTOMATIC DEFROST OR FROST FREE _____ 28

SEPARATE FOOD FREEZER _____ 29

2. HEATING FUELS (Please check all the fuels you use to heat your dwelling)

ELECTRICITY	☐ 30	WOOD	☐ 34
PIPED IN GAS	☐ 31	KEROSENE	☐ 35
BOTTLED GAS	☐ 32	OTHER	☐ 36
OIL	☐ 33	DON'T KNOW	☐ 37

What is the main fuel used to heat your home? (Please check only one)

ELECTRICITY	☐ 38	WOOD	☐
PIPED IN GAS	☐	KEROSENE	☐
BOTTLED GAS	☐	OTHER	☐
OIL	☐	DON'T KNOW	☐

Have you converted to your present main fuel for heating since April 1981?

YES ☐ 39 ...What heating fuel did you use previously? (Please check only one)

ELECTRICITY	☐ 40	OIL	☐
GAS	☐	OTHER	☐

NO ☐

Do you plan to convert to another main fuel for heating?

YES ☐ 41 ...What heating fuel are you planning to use? (Please check only one)

ELECTRICITY	☐ 42	OIL	☐
GAS	☐	OTHER	☐

NO ☐

3. HEATING METHODS (Please check all the methods you use)

CENTRAL AIR FURNACE	☐ 43	WOOD STOVE	☐ 49
WIRED IN ELECTRIC HEATER	☐ 44	HEAT PUMP	☐ 50
PORTABLE ELECTRIC HEATER	☐ 45	FIREPLACE	☐ 51
HOT WATER HEATING SYSTEM	☐ 46	OTHER	☐ 52
NON-ELECTRIC PORTABLE HEATER	☐ 47	DON'T KNOW	☐ 53
RADIANT CABLES	☐ 48		

4. WATER HEATING FUEL (Please check all the fuels you use)

ELECTRICITY	☐ 54	SOLAR	☐ 58
PIPED IN GAS	☐ 55	WOOD	☐ 59
BOTTLED GAS	☐ 56	OTHER	☐ 60
OIL	☐ 57	DON'T KNOW	☐ 61

5. COOKING FUEL (Please check all the fuels you use)

ELECTRICITY	☐ 62	OIL	☐ 65
PIPED IN GAS	☐ 63	WOOD	☐ 66
BOTTLED GAS	☐ 64	OTHER	☐ 67

6. DWELLING (The premises located at the address of this questionnaire)

SINGLE FAMILY HOUSE (detached) ☐ 68

DUPLEX (two units attached) ☐

ROW HOUSE OR TOWNHOUSE (more than two attached units, each with separate outside entrance) ☐

APARTMENT SUITE ☐

MOBILE HOME ☐

OTHER, please specify _____

When was this dwelling built?

BEFORE 1960	☐ 69	1976 AND AFTER	☐
1960 - 1969	☐	DON'T KNOW	☐
1970 - 1975	☐		

Is this your principal residence? YES ☐ 70 NO ☐

Do you ... RENT ☐ 71 OWN ☐

Are the following included in your rent or maintenance fee?

Heat ..... YES ☐ 72 NO ☐
Hot water ..... YES ☐ 73 NO ☐

What is the total heated area (including basement) in your dwelling?

74 _____ square feet, or 78 _____ square metres

How many people in each of the following age groups live in your dwelling?

OLDER THAN 18	82	_____
FROM 12 - 18	84	_____
FROM 3 - 11	86	_____
YOUNGER THAN 3	88	_____

Have you upgraded your dwelling to reduce heat loss since April 1981?

YES ☐ 90 NO ☐

If yes, what have you upgraded?

INSULATION IN - ATTIC OR CEILING	☐ 91
- EXTERIOR WALLS	☐ 92
- BASEMENT	☐ 93
WINDOWS (double, triple glazed, etc.)	☐ 94
WEATHER STRIPPING OR CAULKING	☐ 95

Have you received any information on energy conservation from B.C. Hydro in the past 12 months?

YES ☐ 96 NO ☐

If yes, have you acted on any of the information to reduce your home energy bill?

YES ☐ 97 NO ☐

THANK YOU